Fig. 1

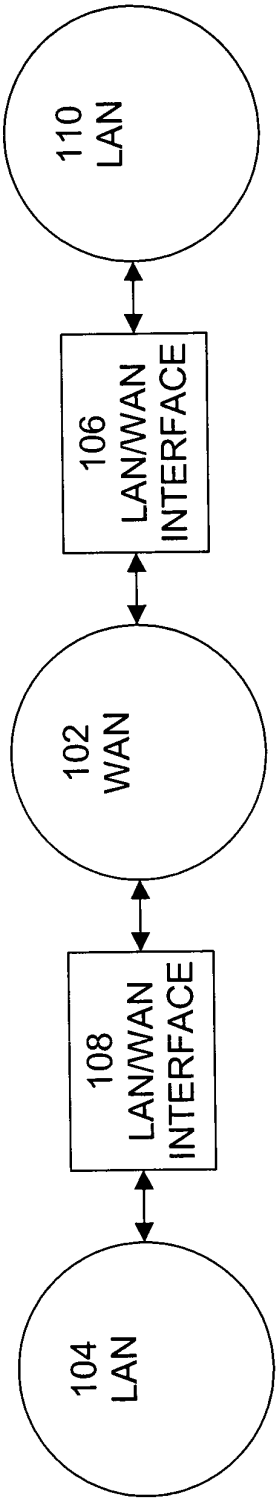
110
LAN
106
LAN/WAN
INTERFACE
102
WAN
108
LAN/WAN
INTERFACE
104
LAN

Fig. 2

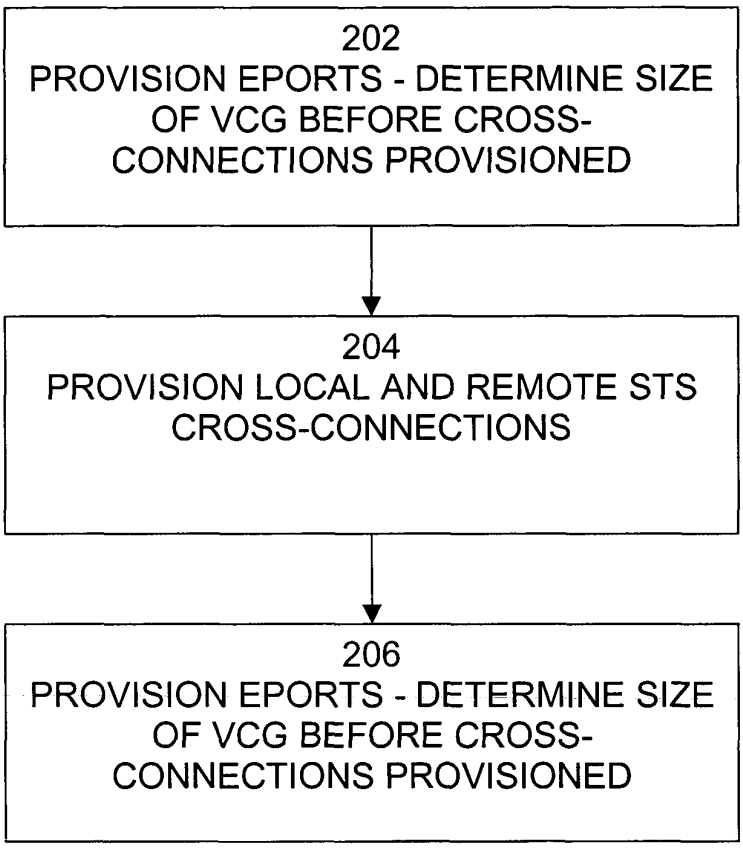
202
PROVISION EPORTS - DETERMINE SIZE OF VCG BEFORE CROSS-CONNECTIONS PROVISIONED
204
PROVISION LOCAL AND REMOTE STS CROSS-CONNECTIONS
206
PROVISION EPORTS - DETERMINE SIZE OF VCG BEFORE CROSS-CONNECTIONS PROVISIONED

Fig. 3

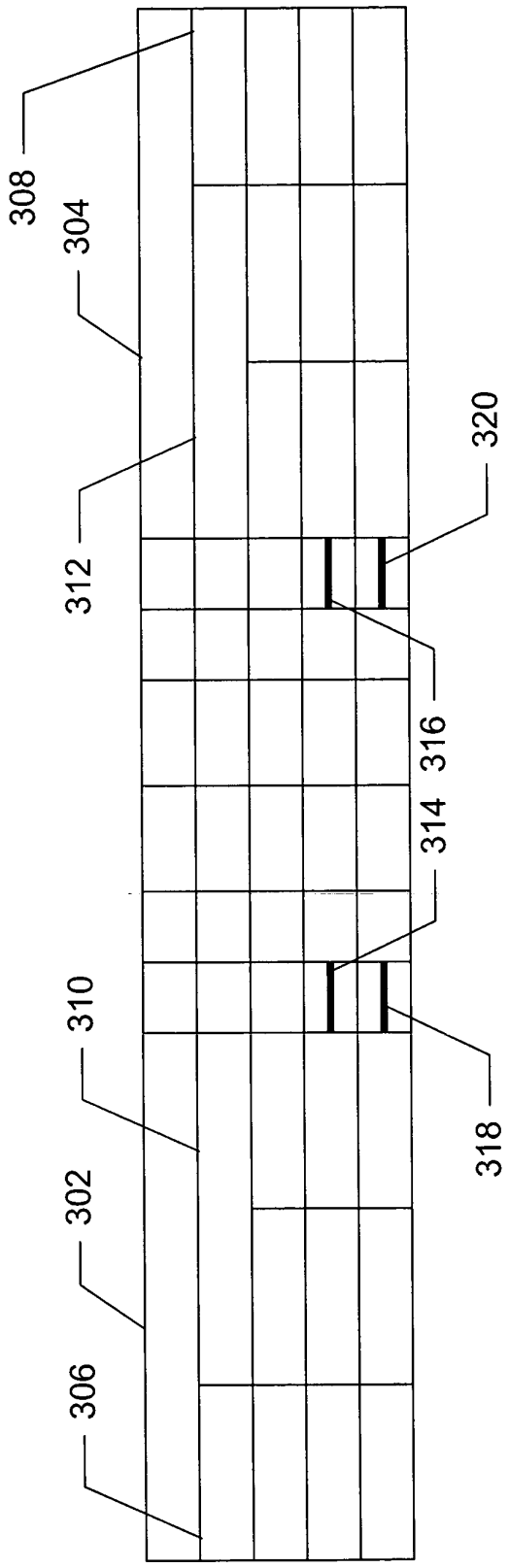

Fig. 4

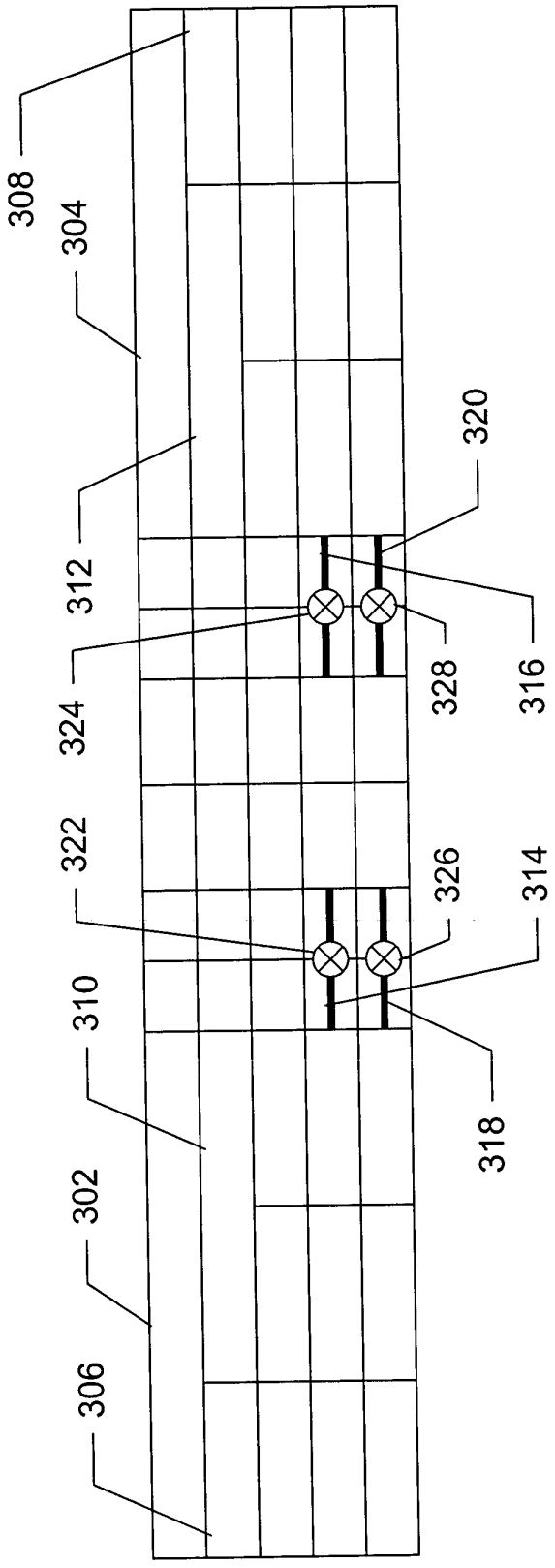

Fig. 5

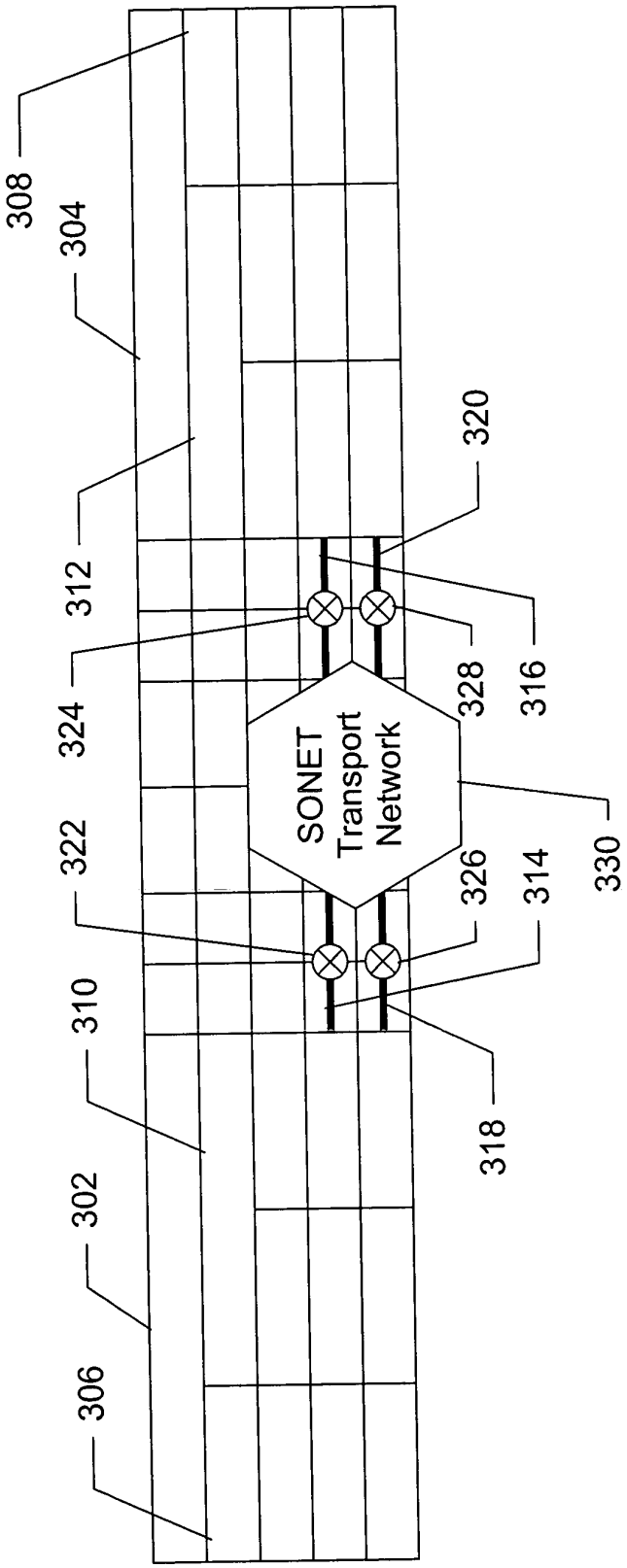
308
304
312
320
324
328
316
SONET
Transport
Network
322
326
314
330
310
318
302
306

Fig. 6

VC Overhead Designation	Description	Used by this invent ion's Implementation of LCAS
CTRL	Used by the Source to request actions by its corresponding Sink.	Y
GID	A number to identify the VC group.	Y
CRC-n	Checksum over all protocol-bytes in the VC multi-frame that contains it.	Y
RS-ACK	Used by the Sink to signal to acknowledge certain Source requests.	Y
Member Status	Used by the Sink to send the current status of all members in the VC group to source.	Y
Sequence Indicator	Identifies the VC group member that the GID and CTRL information correspond to. (For N VC group members, the Sequence Indicator can be a number from 0 to N-1 .)	Y (Also needed for VC without LCAS)

Fig. 7

LCAS Source States	CTRL Designation	CTRL Value (Binary)	Description	Supported by this invention
S-IDLE	IDLE	0101	This member is not provisioned to participate in the concatenated group	N; however, receipt of is supported CTRL=IDLE
S-NORM	NORM	0010	This member is provisioned to participate in the concatenated group and has a good path to the sink end.	Y
S-DNU	DNU	1111	This member is provisioned to participate in the concatenated group and has a failed path to the sink end.	Y
S-ADD	ADD	0001	This member is in the process of being added to the concatenated group..	N
S-REMOVE	nla	n/a	This member is in the process of being deleted from the concatenated group	N
nla	EOS	0011	This is last member in the VC Group (highest Sequence number) .	Y

Fig. 8

LCAS Sink States	Member Status	Member Status Value	Description	Supported by this Invention
S-IDLE	n/a	n/a	This member is not provisioned to participate in the concatenated group.	N
S-OK	OK	0	The incoming signal for this member experiences no failure condition or	Y
			has received and acknowledged a request for addition of this member	N
S-FAIL	FAIL	1	The incoming signal for this member experiences some failure condition or	Y
			or an incoming request for removal of a member has been received and acknowledged	N

Fig. 9

Addressing	Message	Description	Supported by this Invention
From VCG Member(i) Source to VCG Member(i) Sink via CTRL	F-IDLE	Indication that this STS-N is currently not a member of the group and no ADD requests are pending	Rx: Y Tx: N
	F-ADD	Request to add this channel to the group	N
	F-DNU	Request to delete this channel from the group	Y
	F-EOS	Indication that this member has the highest sequence number in the group	Y
	F-NORM	Indication that this member is normal part of the group and does not have the highest sequence number.	Y
From local VCG member(i) to local VCG member(i-l)	C-EOS	Indication that Member (i-l) should change transmitted CTRL word to EOS	Y
	C-NORM	Indication that Member (i-l) should change transmitted CTRL word to NORM	Y
From VCG member(i) Sink to VCG member(i) Source via Member Status.a	R-FAIL	Sink member status FAIL.	Y
	R-OK	Sink member status is OK	Y
Local Management System to Source VCG.	M-Add	Management System request to add a new member to the VCG.	N
	M-Remove	Managment Systen request to remove a member from the VCG.	N
Sink VCG to Source VCG	R-RS-ACK	Used to acknowledge the detection at the sink side of a renumbering of the sequence or the reception at the sink side of the F-IDLE message.	Y
Local SONET STS processing for VCG member(i)to VCG member(i)	SSF	SONET STS Fail.	Y

Fig. 10

Initial State	Stimulus Priority	Action	Final State
S-NORM	Rx: C-NORM Low	Tx: F-NORM	S-NORM
	Rx: C-EOS Low	Tx: F-EOS	S-NORM
	Rx: R-FAIL High	1) If the source member is the last, then Tx: C-EOS to member(i-I). 2) Tx: F-DNU	S-DNU
S-DNU	Rx: C-EOS Low	Tx: C-EOS to member(i-1). Tx: F-DNU	S-DNU
	Rx: C-NORM Low	Tx: C-NORM to member(i-1) Tx: F-DNU	S-DNU
	Rx: R-OK High	1) If the source member is the last, then Tx: F-EOS and TX: C-NORM to member(i-1) else Tx: F-NORM	S-NORM

Fig. 11

Initial State	Stimulus Priority	Action	Final State
S-OK	Rx: SSF	Tx: R-FAIL	S-FAIL
	Low		
	Rx: F-IDLE	Tx: R-FAIL	S_FAIL
	High		
S-FAIL	Rx: Not-SSF	If Rx: F-IDLE Tx: R-FAIL	S-FAIL
		If not Rx: F-IDLE Tx: R-OK	S-OK